Argonne NATIONAL LABORATORY

Sync Matrix Reader Emergency Planning Software Users Guide

Decision and Information Sciences Division

Sync Matrix Reader Emergency Planning Software Users Guide

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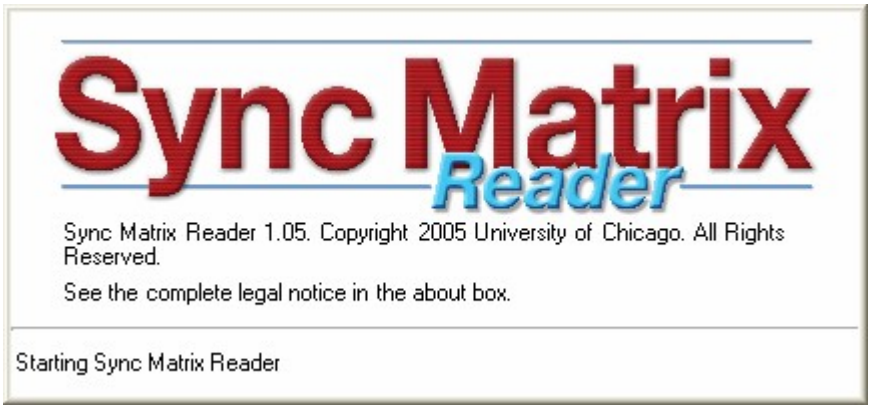
Welcome

Welcome to the Sync Matrix Reader application. This tool gives you the ability browse any Sync Matrix emergency response plans to which you have been granted access.



Introduction

The Sync Matrix Reader software is an interactive planning tool that provides emergency response professionals a picture of the many interactions that occur as a response unfolds over time. It helps emergency planners better organize, visualize, and analyze the flow of activities within and across response jurisdictions, be they "geo-political" areas (states, counties, and municipalities), corporate entities (national, regional, district, individual stores), or departments and agencies of a larger organization structure.

Designed for ease of use, Sync Matrix Reader uses a frame structure similar to other products that users may already be familiar with, such as Microsoft® Outlook®. The many features and innovations in Sync Matrix Reader include:

- A client-server architecture that supports both remote and local access to data via replication.
- The monitoring of inter-jurisdictional dependencies.
- "Knowledge-at-a-glance" activity graphics.
- Relationship-driven matrices.
- Individual jurisdiction-specific matrices that can be combined into a single "master" matrix.
- A variety of outputs, including a plotted matrix and various activity reports.
- The ability to prepare Adobe® Acrobat® versions of all outputs.
- The ability to export reports to Microsoft® Excel®.

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Getting Started

Sync Matrix Reader was designed to be easy to use. Its visual environment uses a two-pane representation that is similar to many other software packages for the Microsoft Windows operating system. The left-most pane shows the server explorer while the right-most pane is used to show the currently active page.

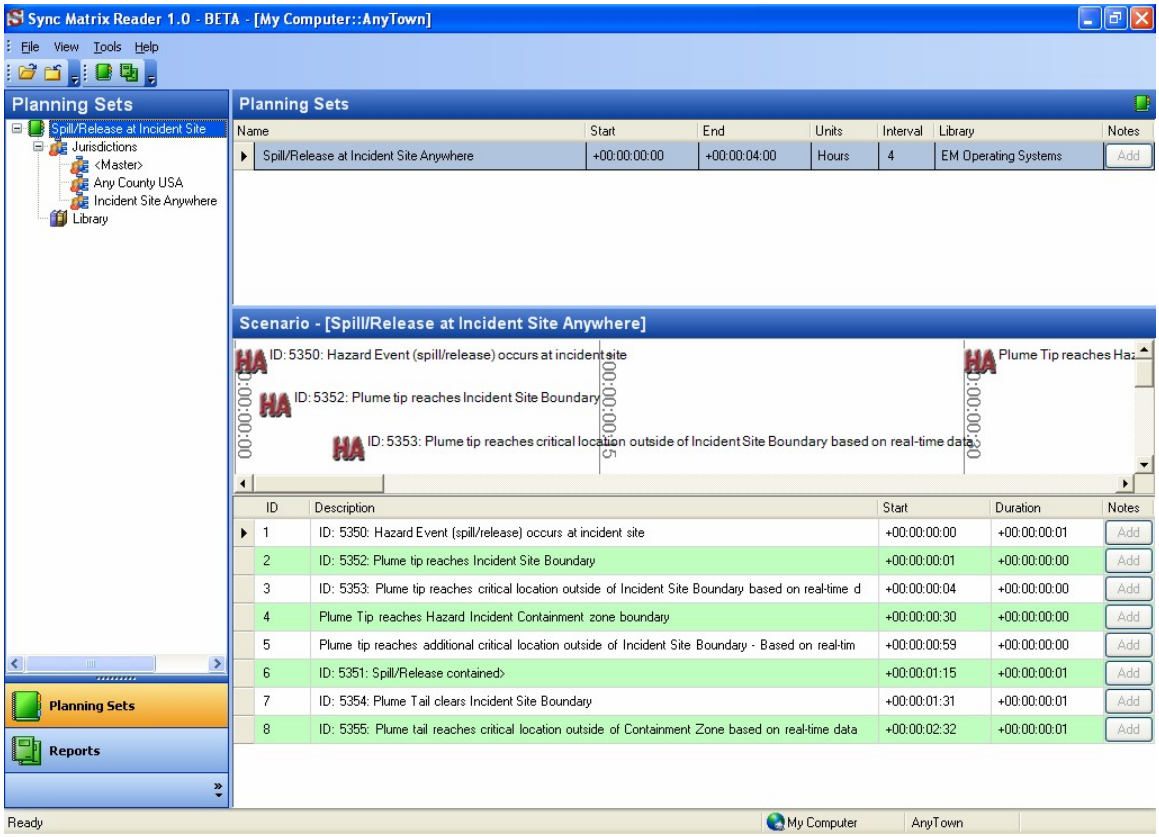

Figure 1. Sync Matrix Reader Visual Environment

Server Explorer

The server explorer, shown in Figure 2, is used to provide high-level navigation within the Sync Matrix Reader visual environment. It provides an at-a-glance overview of the major elements of the current site with which you are interacting.

Figure 2. Server Explorer

The server explorer is broken down by topical areas within the site. Each of these areas is identified by a separate tab within the server explorer. These tabs are:

- **Planning Sets**. A planning set represents a particular emergency. It defines a scenario, consisting of one or more hazards, one or more jurisdictions that must respond to the emergency, and a library, which is used to define the major functional areas within the response. Each jurisdiction will ultimately produce a matrix, which describes their response to the emergency described by the planning set.
- **Reports**. The **Reports** tab provides you with several pre-defined reports that can be used to generate a printable record of an emergency response plan.

To access the particular area of Sync Matrix Reader, simply click on the appropriate tab within the server explorer. The right-hand side of the screen will change to show the details for that particular topical area. For example, clicking the planning sets tab will display the planning set maintenance page. Similarly, clicking the jurisdictions tab

will show you the jurisdiction maintenance page. You can change to any page at any time; you need not follow any particular sequence.

The various tabs each contain their own view of data. In Figure 2, the planning set tab is selected. Within the server explorer you can see the planning sets shown within a tree with the "IED" planning set branch currently expanded. By interacting with this tree, you can control which page of information is currently displayed in the main region of the application. We'll cover the various tabs and their associated pages in depth throughout the remainder of this guide.

You can make some basic changes to the server explorer. This topic is explored in greater detail in the section called "Customizing the Server Explorer."

Customizing the Server Explorer

The server explorer provides a quick means of navigating to most of the information within a Sync Matrix Reader site. It also allows you to perform some basic customizations to its look and feel. Some of these customizations include:

Hiding tabs. While all of the tabs in the server explorer are useful, there are times that you may not wish to see them. For example, you might wish to hide the **Users** tab to provide more display area for the **Jurisdictions** tab. To hide a particular tab, follow these steps:

1. Click on the arrow icon in the server explorer's overflow area. You will be presented with a menu of options. Nearly all of the items on this menu can be used to hide or show the tabs in the explorer.
    a. **Show Fewer Buttons**. This menu option will hide the bottom-most visible tab on the explorer. The icon for that tab will be placed into the overflow area.
    b. **Navigation Pane Options**. This menu item will activate the dialog shown in Figure 3. Using this dialog you can select or deselect the tabs that you wish to be displayed in the server explorer. Tabs that are deselected using this method will not be available in the explorer's overflow area.

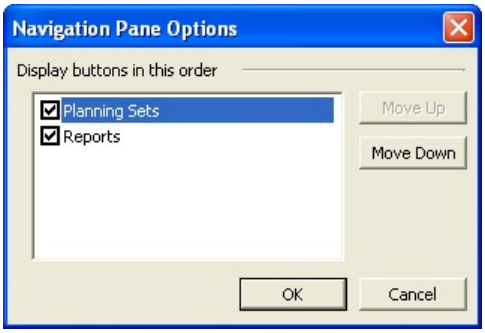

Figure 3. Navigation Pane Options Dialog

c. **Add or Remove Buttons**. This menu item behaves as a shortcut to the navigation pane options described above. Tabs removed using this method will not be available in the explorer's overflow area.

Alternatively, you can simply place your mouse on the divider that separates the upper-portion of the server explorer from its tabs and drag it toward the bottom of the screen. As you drag that divider further toward the bottom of your screen, any of the tabs that it encounters will be placed into the explorer's overflow area.

To make hidden tabs visible, you can simply follow the steps above and re-select the hidden tab using the **Navigation Pane Options**, **Add or Remove Buttons**, or **Show More Buttons** menu items. You can also drag the divider so that you increase the amount of space available for the tabs. As more room becomes available, more tabs will be added back to the main tab area and removed from the overflow area.

Reordering tabs

Sync Matrix Reader allows you to further customize the server explorer so that the tabs appear in the order that you wish. To reorder the tabs, perform the following steps:

1. Click on the arrow icon in the server explorer's overflow area. You will be presented with a menu of options.
2. Click on the **Navigation Pane Options** menu item. You will be shown the navigation pane dialog as seen in Figure 3.
3. Select the tab that you wish to move by clicking on its name within the dialog. Do not click on the checkbox to the left of the tab name unless you intend to also hide or show that tab.
4. Click on the **Move Up** and **Move Down** buttons until the tab is in the position that you want it.
5. Repeat for all other tabs until the server explorer has the configuration you want.
6. Click the **OK** button to apply your changes or the **Cancel** button to undo those changes.

Grids

On many pages within Sync Matrix Reader you will see what appears to be a small spreadsheet. These *grids* provide you a quick way of viewing your data. Figure 4 shows a typical grid within Sync Matrix Reader. The grid is divided into rows and columns. Each column represents a particular piece of data, and each row represents an entire data record from the Sync Matrix Reader software. The intersection of a row and

a column is called a *cell*. Within Sync Matrix Reader, each cell is read-only, meaning that you will not be able to change its contents. To change the contents of an actual matrix, you must have the full Sync Matrix Reader software.

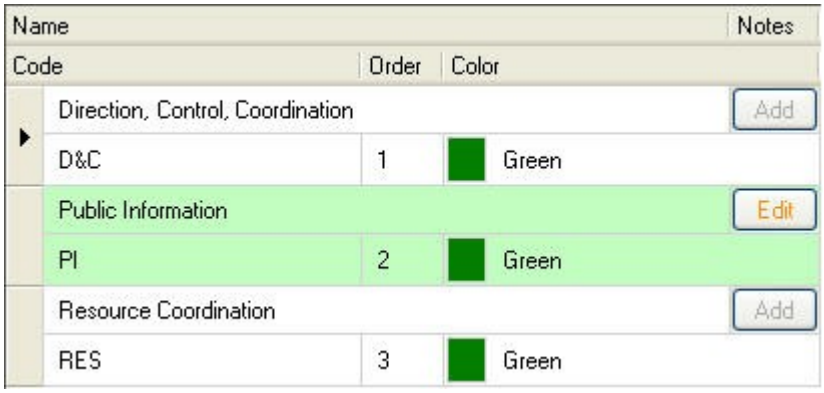

Figure 4. Sample Grid

Each grid has a column of grey boxed down its left-hand side. A black arrow (►) might appear within one or more of these boxes. This is called the *row indicator* and it tells you which row in the grid is the current one. In addition, each grid has a row of grey boxes across its top called its *header*. Each box in the header contains a title that describes what that particular column in the grid is used for.

Some grids, like that shown in Figure 4, are *multi-line grids*. This means that a single record can span more than one line in the grid. It is easy to know which grids are multi-line because the row indicator will span more than one line in the grid. You can work with multi-line grids in exactly the same way that you work with single-line grids; multi-line grids simply provide a means of representing a large amount of data without requiring unnecessary scrolling by the user.

Most grids have context menus associated with them. These menus allow you to perform a variety of tasks such as adding new items to a grid, removing items from a grid, and saving your changes. Additional information about some of the most common menu items appears elsewhere in this guide.

There are a variety of things that you can do with a grid. For example, clicking a column header will sort the grid in ascending order based on the values in that column (shown by the *sort indicator* in the column's title). Clicking that column header again will sort the grid by its values in descending order. Clicking the same column a third time will remove the sort altogether. You can also resize the columns as necessary by clicking on the small vertical bar between the headers of two columns and dragging your mouse to the left or right while holding down the left mouse button. Releasing the left mouse button will then change the size of the column.

Some grids allow you to *filter* the information contained within the grid. This is most notable in the activity grid on the matrix page. The image of a small funnel will appear on each column in a grid for which filtering is allowed. By clicking this icon you can select the value that you wish to see in the grid. Only the rows that match the conditions of the filter will be shown in the grid. The reset of the rows will be "filtered out" or hidden. This capability allows you to focus on a subset of the grid's rows that are of the greatest concern to you.

Almost all grids have a column for *notes*. Notes are just that – descriptive comments that serve to tell someone more information about that particular grid row than is captured in the other columns. As shown in Figure 4, the column titled "Notes" contains a button. The title and color of the button indicate whether or not there are notes already available. For example, the row with the name "Direction, Control, Coordination" does not currently have any notes attached to it. You can see this by noticing that the button in the "Notes" column is labeled "Add" and is gray. On the other hand, the row named "Public Information" does contain notes. This is reflected by the wording on the button, "Edit", and its orange color. By clicking this button you can access the *notes editor* as shown in Figure 5.

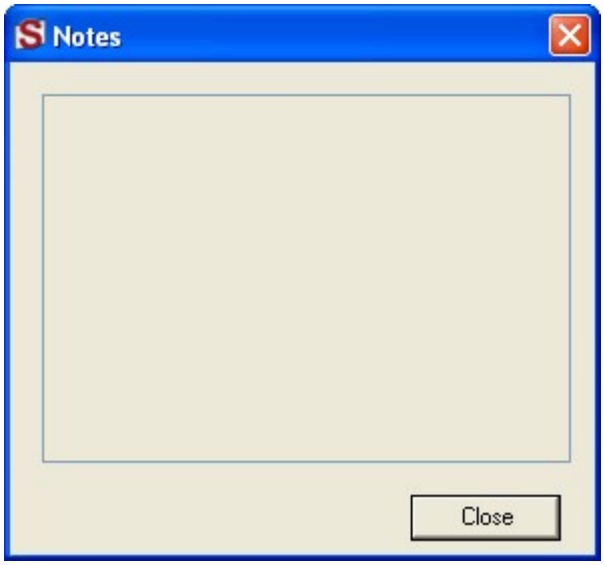

Figure 5. Notes Editor Dialog

When you are done viewing the notes, click the **Close** button to return to the grid.

Menus

Sync Matrix Reader provides a small set of menus. These menus are divided into application menus and context menus. The application menus are those that are available at the top of the main Sync Matrix Reader window. Some of these menu items are also available on the application toolbars.

There are only a few application menus:

- **File**. This controls common file-oriented processing such as opening and closing sites, setting up the printer, and saving site changes.
- **View**. The view menu provides an alternative to navigating the server explorer. Each button corresponds to a tab in the server explorer.
- **Tools**. This menu provides the most common tools for tasks such as allowing a user to change their password or to configure Sync Matrix Reader options.
- **Help**. The help menu provides access to this online help documentation.

In addition, most grids and other controls have a context or popup menu. This menu can be activated by right-clicking the mouse. Once the menu is displayed, you can click on its items like any other menu. There are some common menu items that are available on many of the grids within Sync Matrix Reader. These include:

- **Refresh**. Reloads the contents the grid.
- **Details**. Opens a dialog displaying the details of the grid row.

Servers and Sites

Sync Matrix Reader can be configured to use several different *topologies*. A *topology* is simply the configuration of the Sync Matrix Reader client and its relationship to the Sync Matrix Reader server. The Sync Matrix Reader *client* is the actual application described within this user's guide. The Sync Matrix Reader *server* is the data management system that is responsible for storing all of your Sync Matrix Reader data. Servers can be either *remote* or *local*. A remote server is one that runs on a different machine from that of the Sync Matrix Reader client. A *local* server is one where the Sync Matrix Reader client and the Sync Matrix Reader server reside on the same physical machine.

Servers store their data in *sites*. Like servers, sites can also be local or remote. A local site is a site that is stored on a local server. A remote site is a site that is stored on a remote server. It is important to realize that a site's data is not stored within the Sync Matrix Reader client itself. Instead the Sync Matrix Reader client simply accesses these data as interactions with the user dictate. Whereas configuring the Sync Matrix Reader client to access a server does not actually affect the server, creating and deleting sites does affect the server.

Now that you have seen the basic concepts behind Sync Matrix Reader clients and servers, let's discuss the three topologies that you can use to support your organization's emergency response planning efforts. These topologies are:

- Local server topology
- Remote server topology

In a *local server* topology the Sync Matrix Reader client and Sync Matrix Reader server are installed on the same machine. This is, in fact, the way that the software is installed by default. This topology allows you to can always use the Sync Matrix Reader software even if you do not have a remote server on which to store your data. If you choose to use this topology, you should be prepared to perform your own site backups and to restore sites from those backups when necessary. This topology is shown in Figure 6.

Figure 6. Local Server Topology

The second topology is the *remote server* topology illustrated in Figure 7. In this topology, one or more Sync Matrix Reader clients coordinate with a centralized Sync

Matrix Reader server that is responsible for maintaining all of the client's data. This is a common approach when one or more emergency response plans needs to be shared by different users. For example, each user could have the Sync Matrix Reader software installed on their local machine while their data are stored in a site on a common file server.

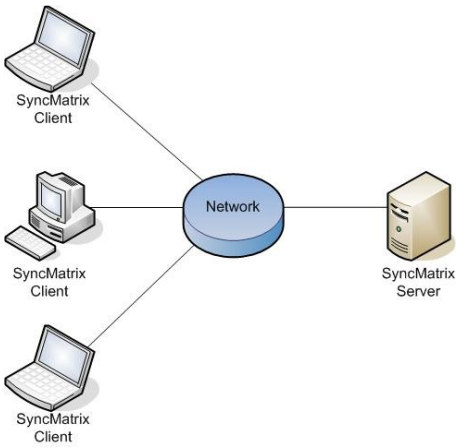

Figure 7. Remote Server Topology

As you can see from the diagram, the remote server topology requires that the Sync Matrix Reader client be able to contact the Sync Matrix Reader server through a network. This topology can be useful when all of the clients are co-located and part of the same network. It is typically the role of the Sync Matrix Reader administrator to perform all site backup and recovery.

In theory, there is no difference in the use of the application regardless of whether or not you are using a local or remote server and site. In practice, the only difference is that to access a remote server and site, you must be able to access the network on which that site is stored.

You can configure Sync Matrix Reader to support both topologies at once without stopping and restarting the Sync Matrix Reader software. This means that you can work with some of your plans in a strictly local server topology, work with shared data using a remote server, and maintain a local replicated copy of a remote site.

Opening a Site

The most common action that you will do with a site is to open it. When you open a site, you can gain access to its contents, which includes planning sets and matrices.

In order to open an existing site you must know several things:

- The server on which the site resides,
- The name of the site

Once you have this information, perform the following steps to open the site:

1. Open the open site dialog shown in Figure 8. This can be done by clicking the **File ▶ Open Site…** menu item. This dialog will also be presented to you when the Sync Matrix Reader software is first started.

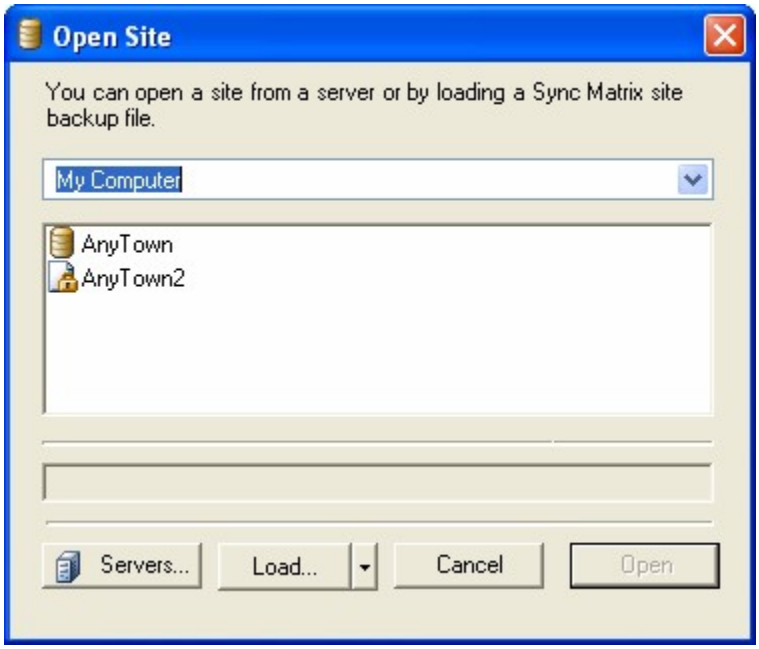

Figure 8. Open Site Dialog

2. Select the server that stores the site that you want to open from the drop-down list at the top of the dialog.

Note: When you select a server from the drop-down list, you will be presented with a list of the sites that are available within that server. If you do not see the site that you want, make sure that you have selected the correct server.

3. Select the site that you want from the list of sites below the server drop-down.

Note: As you can see from the figure, there are two kinds of sites. Those that reside on a database and those that are files. The icon that looks like a cylinder means that the site resides in a database. The icon that looks like a locked

document means that the site came from a *loaded* backup file. The loading an unloading of backup files is covered in more detail later in this chapter.

4. Click the **Open** button. You can also double-click the site that you selected in step #3.

Note: The **Open** button will not be enabled until you have selected a site.

5. Click the **Open** button and Sync Matrix Reader will attempt to open the site.
6. Once the site is successfully opened, you will be brought to the main Sync Matrix Reader visual environment.

Is you were unable to find the appropriate server in the server drop-down list, then you might need to add the server to your Sync Matrix Reader configuration. If you were unable to locate the site that you wished to open, make sure that the site exists on the server that you selected in the server drop-down.

When you are done with the site, it is a good idea to close it. This helps to ensure that any sensitive data within the site cannot be accessed from your Sync Matrix Reader installation by unauthorized individuals. You can close the site by clicking the **File ▶ Close Site** menu item or by clicking the **Close Site** button on the application toolbar.

Loading a Site from a Sync Matrix Backup

Sync Matrix Reader works with site backup files that have been created by the Sync Matrix software. However, before you can open those sites, they must first be loaded into Sync Matrix Reader. This is accomplished using the **Load** button on the *Open Site* dialog.

1. Open the open site dialog shown in Figure 8. This can be done by clicking the **File ▶ Open Site…** menu item. This dialog will also be presented to you when the Sync Matrix Reader software is first started.
2. Click the **Load** button.
3. You will be presented with the *Sync Matrix Backup Files Selection* dialog.

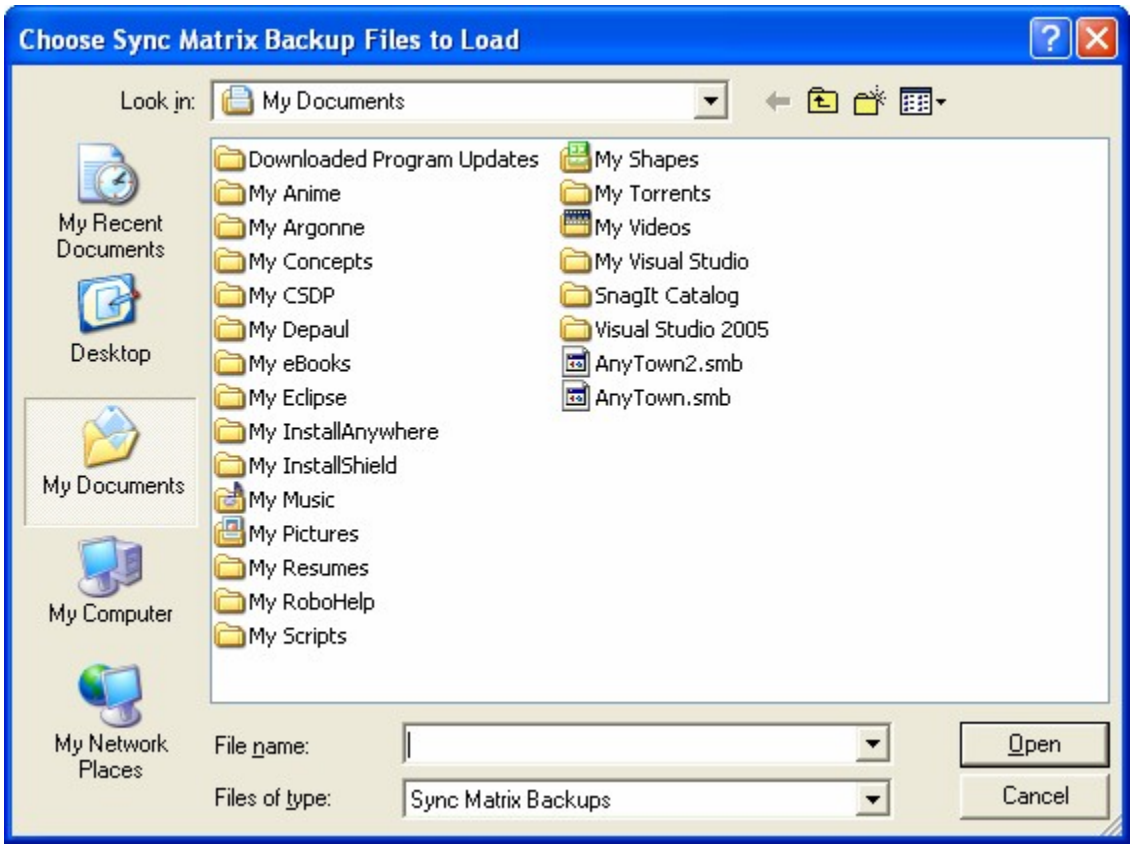

Figure 9. Sync Matrix Backup Files Selection Dialog

4. Select the Sync Matrix site backup files that you wish to load into your local server and click the **Open** button. Sync Matrix Reader will attempt to load the contents of the Sync Matrix site backup files that you selected.

Note: If you attempt to load a Sync Matrix site backup file that was loaded previously, Sync Matrix Reader will ask you to confirm the load.

5. Once Sync Matrix Reader has finished loading the selected Sync Matrix site backup files, you will be returned to the Open Site dialog where you can open the loaded site.

Note: Loaded sites are only visible when you are on the "My Computer" server.

Unloading a Sync Matrix Site Backup

Eventually you will probably wish to remove some of the site backups that you've loaded. You can do this by *unloading* the site:

1. Open the open site dialog shown in Figure 8. This can be done by clicking the **File ▶ Open Site…** menu item. This dialog will also be presented to you when the Sync Matrix Reader software is first started.
2. Click the **Unload** button (triggered by clicking the arrow on the **Load** button).
3. You will be asked for confirmation before the unload takes place. Choose **Yes** to perform the unload and **No** to cancel it.

Once you have unloaded a Sync Matrix site backup, you can always recover it by loading the original backup file.

Adding a New Server

Once a Sync Matrix server has been installed, the Sync Matrix Reader client can be configured to connect to that server. This is accomplished through the open site dialog shown in Figure 8. This dialog shows the list of defined servers in the drop-down list at the top, and the list of sites that are available for that server in the list beneath.

Note: You will always have a local "My Computer" server installed, although this server does not appear in the server maintenance dialog. However, if you add a new "My Computer" server entry in the server maintenance dialog, its settings will override the Sync Matrix Reader default settings.

Suppose that you are part of a group working on a new emergency response plan and you need to configure your Sync Matrix Reader installation to be able to use the server on which this shared planning data resides. To configure the new server, you perform the following steps.

1. Open the open site dialog. This can be done by clicking the **File ▶ Open Site…** menu item. This dialog will also be presented to you when the Sync Matrix Reader software is first started.
2. Click the **Servers…** button at the bottom of the open site dialog. You will be presented with the server maintenance dialog shown in Figure 10. This dialog allows you to define the characteristics of the connections that your Sync Matrix Reader installation will make to remote servers. This dialog does not affect those servers in any way.

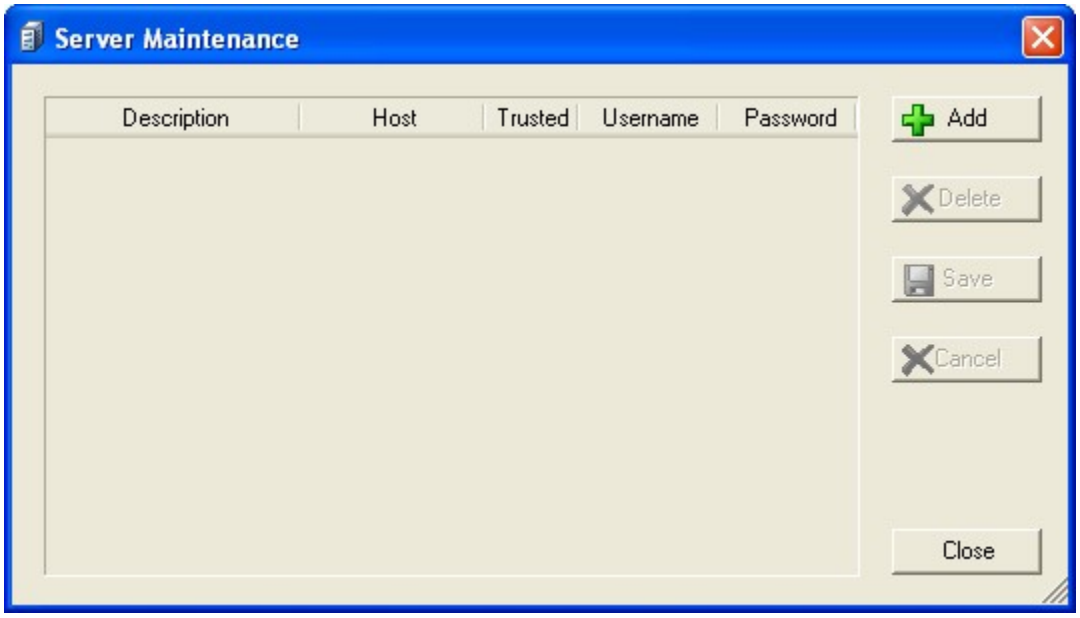

Figure 10. Server Maintenance Dialog

The columns in the grid are as follows:

- **Description**. A descriptive name for this server entry. This can be anything that you want, but it should be somewhat indicative of the server's purpose.
- **Host**. The host name or IP address of the server that you are defining. If you are not sure about this value, consult your system administrator.
- **Trusted**. This checkbox indicates whether or not the server uses a trusted connection. If you are not sure about this value, consult your system administrator.
- **Username**. The name of the user that you will use to connect to the server. If you are not sure about this value, consult your system administrator.
- **Password**. The password associated with the username. Most servers will not allow you to connect to them without both a username and a matching password. If you are not sure about this value, consult your system administrator.

3. Suppose that your shared emergency planning data resides on a server called **topoff2.dis.anl.gov**. To make your software aware of this new server, first click the **Add** button. A new row will appear at the bottom of the grid containing all of your servers where you can enter the appropriate data. For this example, give the new server a description of **Plan Development**, a host name of **topoff2.dis.anl.gov**, and indicate that this is a trusted connection. This new server is shown in Figure 11.

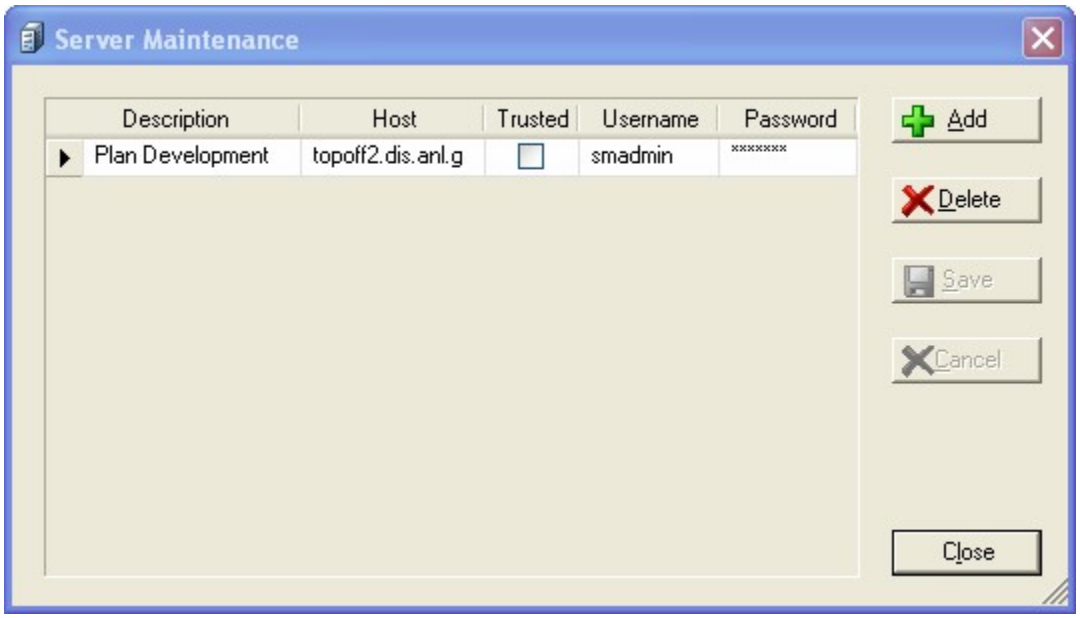

Figure 11. Plan Development Server Added

Note: Except for the description, all of the other information should come from your Sync Matrix Reader administrator. Before you'll be able to connect to a new server, your administrator must have already configured the server to support the Sync Matrix Reader software and created a username and password (or configure the trusted security) so that you will be able to connect to that server.

4. Once you have added all of the information for the new server, click the **Save** button to store those changes in your local Sync Matrix Reader configuration.

Note: Adding a server does not create a new server; the server must already exist. Instead, the addition of a server simply makes your Sync Matrix Reader installation aware of that pre-existing server and tells it how to access the emergency planning data stored on that server.

5. Click the **Close** button to return to the site maintenance dialog. You will now see that there are two servers defined in the drop-down list at the top of the screen: *My Computer* and the new server *Topoff2*. If you select the new *Topoff2* server you will see the list of available sites on that server. If you do not see any sites, then it is possible that no sites have been configured on that server yet.

Now that you have defined a server to the Sync Matrix Reader, you can work with the sites on that server.

Changing a Server

Occasionally, you may need to modify an existing server configuration within your Sync Matrix Reader client.This could happen if the administrators move the emergency planning data from one server to another or if they decide to change the username or password used to access that planning data. To update an existing server configuration, follow these steps:

1. Open the open site dialog. This can be done by clicking the **File ▶ Open Site…** menu item. This dialog will also be presented to you when the Sync Matrix Reader software is first started.
2. Click the **Servers…** button at the bottom of the open site dialog. You will be presented with the server maintenance dialog shown in Figure 10.
3. Select the server that you wish to modify by clicking the grey box to the left of the server's row. A black ▶ will point to the currently selected server.
4. Click your mouse in the cell containing the data to be modified.
5. Change the existing data to the correct value.

Note: Changing the values for a server does not affect the server in any way. Instead it simply alters the Sync Matrix Reader client's knowledge of how to contact and communicate with that server.

6. Click the **Save** button to save your changes or click the **Cancel** button to discard those changes.

Note: You cannot cancel changes that have already been saved.

7. Click the **Close** button to return to the open site dialog.

Removing a Server

If you work on many projects, you may eventually find that you have a great many servers defined to your Sync Matrix Reader configuration. Wading through a long list of servers to locate the one you want to use can be inconvenient. Similarly, it is possible that some servers may no longer be used to store Sync Matrix emergency response plans. In either case, it may be desirable to remove the unneeded servers.

To remove a server, follow these steps:

1. Open the open site dialog. This can be done by clicking the **File ▶ Open Site…** menu item. This dialog will also be presented to you when the Sync Matrix Reader software is first started.
2. Click the **Servers…** button at the bottom of the open site dialog. You will be presented with the server maintenance dialog shown in Figure 10.
3. Select the server that you wish to remove by clicking the grey box to the left of the server's row. A black ▶ will point to the currently selected server.
4. Click the **Delete** button. The server will be removed from the server grid.

Note: Deleting a server does not actually destroy that server. Instead, it simply removes the knowledge of how to interact with that server from your Sync Matrix Reader client. If you make a mistake and delete the wrong server, you can always re-add the server later and regain access to all of the sites stored on that server.

5. Click the **Save** button to save your changes.
6. Click the **Close** button to return to the open site dialog. The server that you just deleted will no longer appear in the drop-down list at the top of the screen.

Planning Sets

At the heart of the Sync Matrix approach to emergency response planning is the concept of the *planning set*. A planning set describes an emergency that consists of a *scenario*. Each scenario is essentially a story that describes a sequence of hazard actions, or events, that unfold and serve to describe the nature of the emergency for which a response is being planned.

Jurisdictions participate in a planning set by defining matrices that describe their response to the scenario describe within that planning set. Planning sets make use of libraries, which describe the functional areas of each jurisdiction's response.

The administration of planning sets happens using three different pages: the Planning Set page, the Planning Set Library page, and the Planning Set Jurisdictions page. The Planning Set page is accessed when you click on the Planning Sets tab in the server explorer. As you can see from Figure 12, the planning set page is divided into two major panels: the Planning Sets panel and the Scenario panel. In addition, the **Planning Sets** tab on the server explorer shows the planning sets that are defined for the current site.

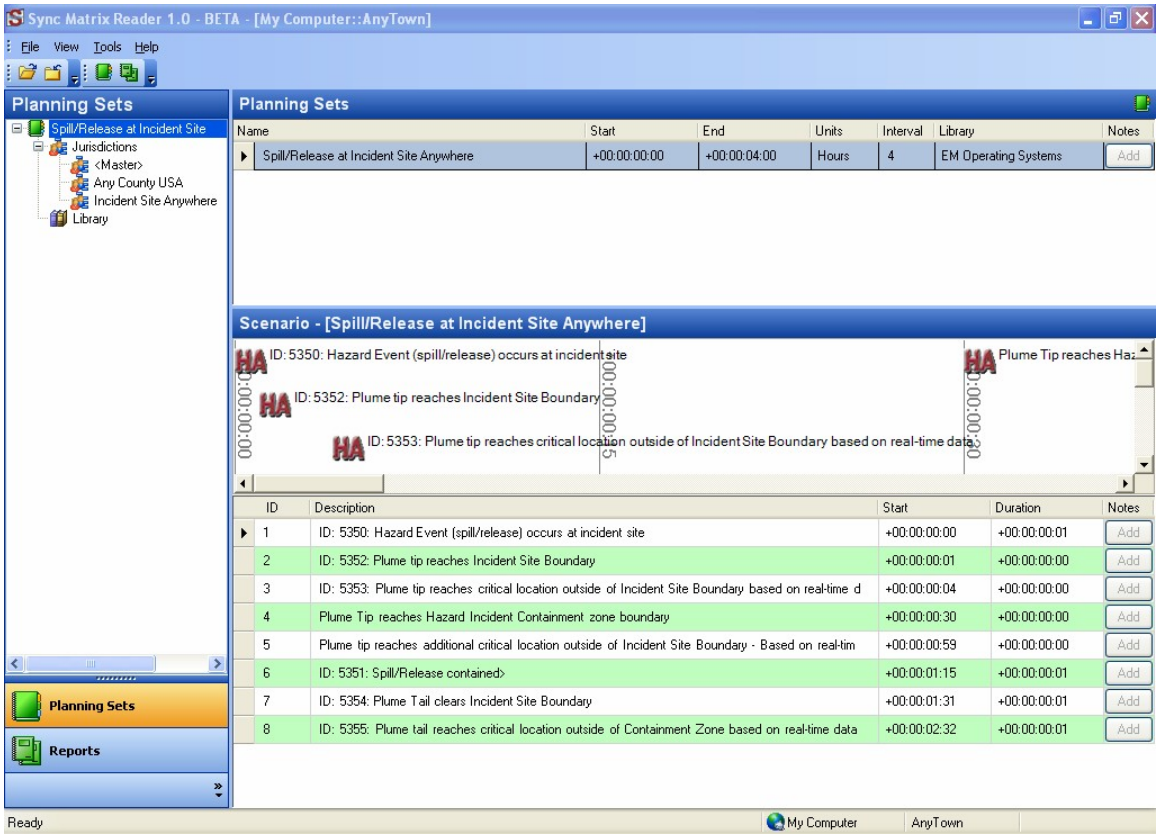

Figure 12. Planning Set View

Clicking on one of those planning sets will open it on the Planning Sets page. When a planning set is selected on the Planning Set page, you will also be shown its scenario. The Scenario panel of the page shows a graphical representation of the hazard actions that comprise the scenario as well as a grid containing more detailed information about those hazard actions.

The second of the three planning set page, the Planning Set Library page, can be accessed by either the Planning Set page or through the server explorer. Using the server explorer you simply click the item labeled "Library" under the planning set that you are interested in. If you are on the main planning set page you can right-click the mouse and click on the "Library" menu item. In either case you will be presented with the Planning Set Library page as shown in Figure 13.

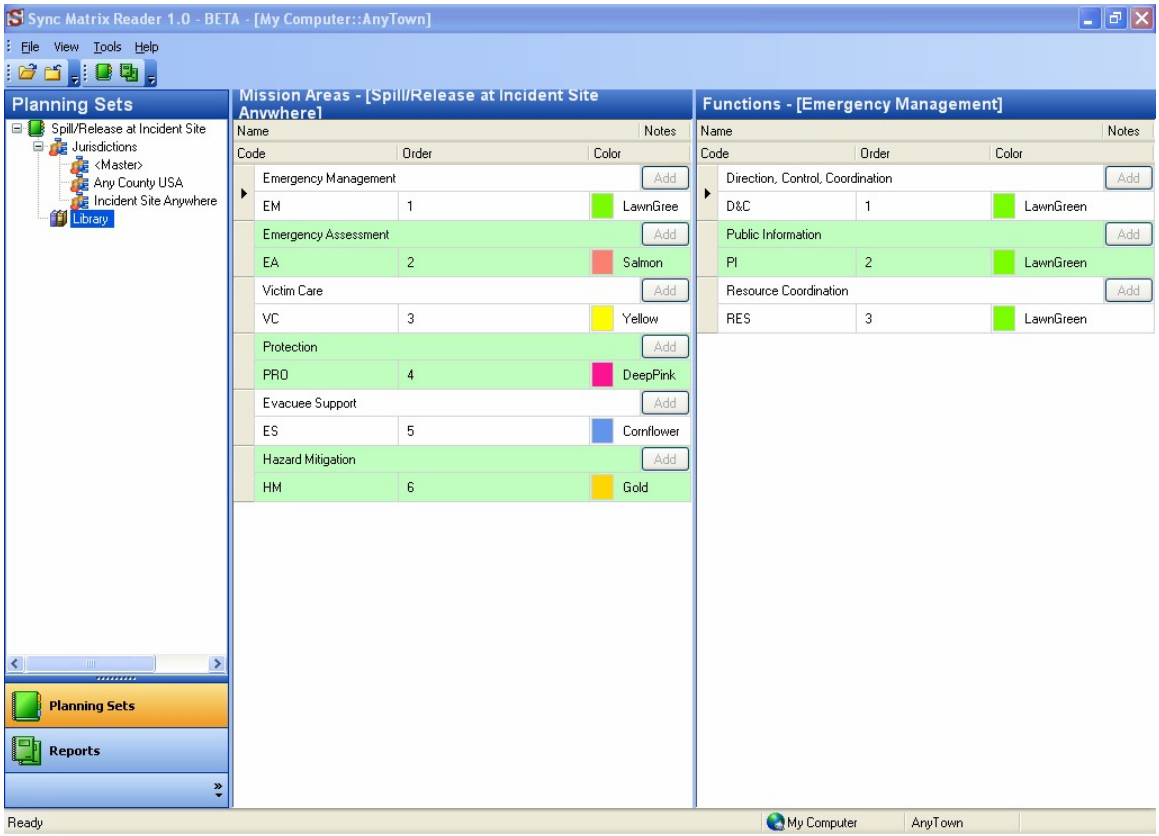

Figure 13. Planning Set Library View

Using this page, you can customize the appearance of the mission areas and functions for the library that underpins the planning set. These changes only apply to this planning set. They do not affect other planning sets or the original library.

The third planning set maintenance page is the Planning Set Jurisdictions page. This page, shown in Figure 14, is used to associate jurisdictions with a planning set. As with the planning set library, you can access this page through either the server explorer or through the main planning set page. Using the server explorer, you can click the item labeled "Jurisdictions" under the planning set that you are interested in. If you are on the main planning set page, you can select the planning set that you are interested in, right-click the mouse and click the "Jurisdictions" menu item.

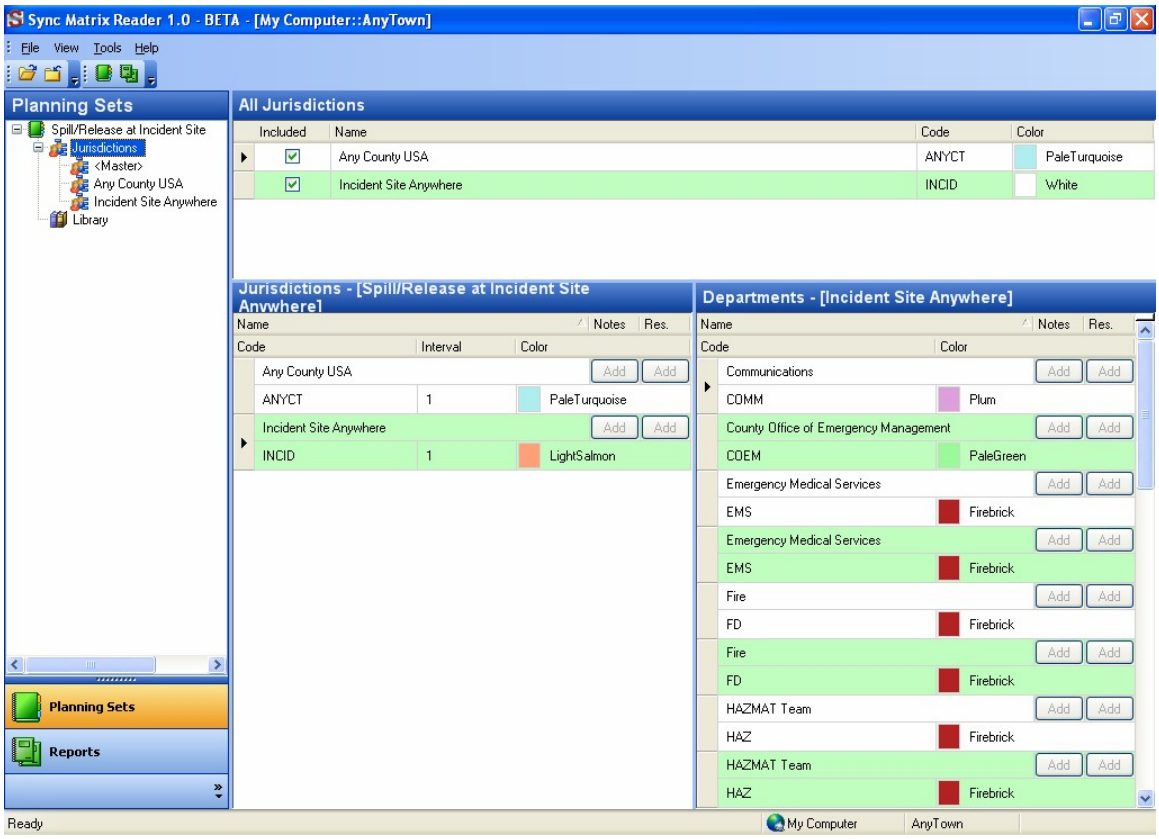

Figure 14. Planning Set Jurisdictions View

The Planning Set Jurisdictions page is divided into three major panels: the All Jurisdictions panel, the Planning Set Jurisdictions panel, and the Planning Set Departments panel. The All Jurisdictions panel specifies which jurisdictions are involved in the emergency response for this planning set. The Planning Set Jurisdictions panel shows you any customizations that have been made to the jurisdictions that are involved in the planning set. The Planning Set Departments panel shows you any customizations that have been made to the departments that are involved in the planning set.

Matrices

A matrix is the heart of the planning process. Once a planning set has been defined that specifies the scope of the emergency in the form of a scenario and identifies the jurisdictions that will participate in the emergency response, those jurisdictions can begin to construct their plans.

Matrices are built using the Activities page shown in Figure 15. This page is accessible from the **Planning Sets** tab of the server explorer by expanding a planning set you will see a list of the jurisdictions that have been assigned to that planning set. Clicking the name of a jurisdiction under the planning set will activate that jurisdiction's matrix.

There is one special matrix called the <Master> matrix. This is a special matrix that includes all of the information from all of the other matrices within the planning set. This matrix is read-only, but serves to provide a representation of the entire emergency response based on the input from all participating jurisdictions.

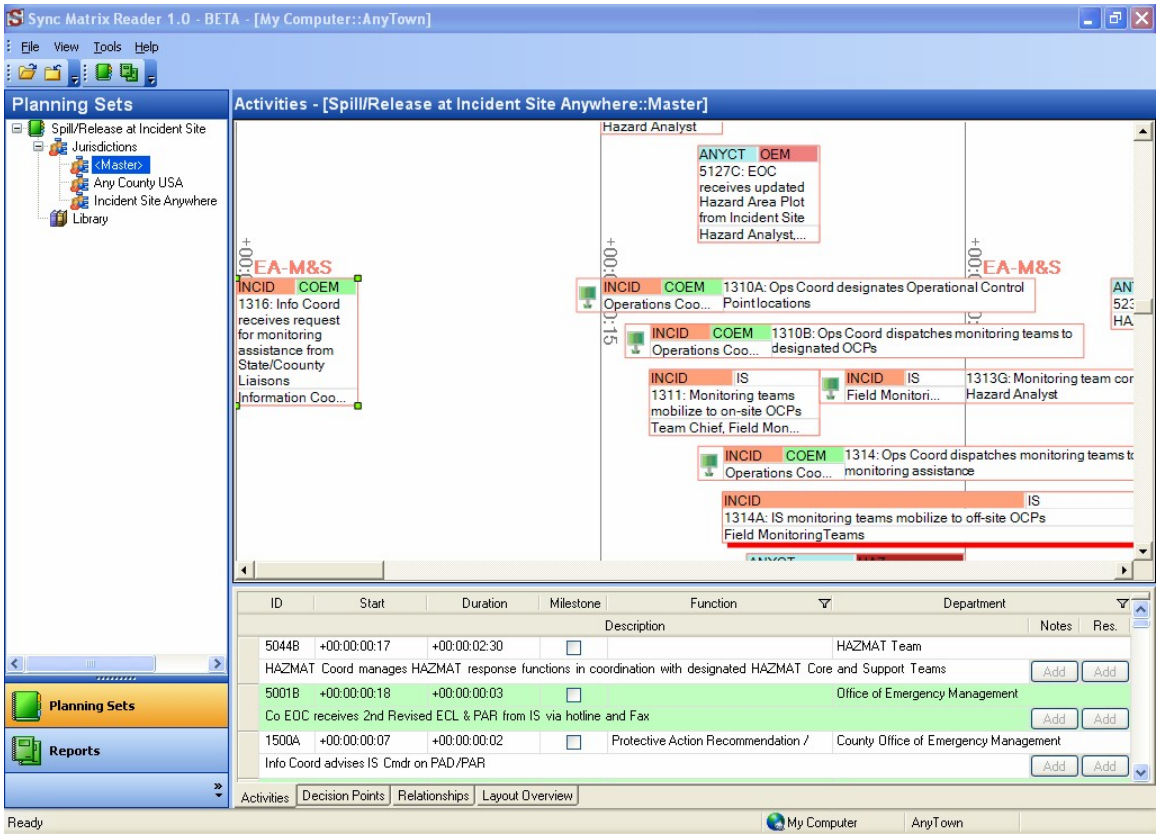

Figure 15. Activity View

The Activity page is divided into two major panels: the Graph panel at the top of the page and the Grid panel at the bottom of the page. The Graph panel provides you a

graphical view of the hazard actions, decision points, activities, and relations that comprise the matrix. The details of the activities and decision points are available in the matrix grid region. Both panels can be used to created new activities, decision points, and relationships. The Grid panel can be used to view and change more details of the activities and decision points than the Graph panel can.

The Graph panel is subdivided into three sections. The top-most section is the Scenario section. It is a read-only representation of the planning set's scenario. The next section down is the Decision Point section, which shows all of the decision points defined by the jurisdiction. The third section is the Activity section. It shows, organized by mission area and function, all of the activities that a jurisdiction will perform in responding to the planning set's scenario. Within this third section you might find three different kinds of activity boxes: activities, compressed activities, and milestones.

An *activity* is just some action that needs to be performed during the emergency response. Activities typically have a start time as well as a duration. They are represented in the graph as seen in Figure 16.

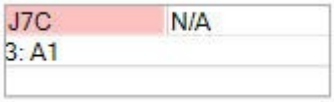

Figure 16. Sample Activity

The activity is divided into several panels. The upper-left panel of the activity contains the code of the activity's jurisdiction while the upper-right panel contains the code of the activity's department. The border color of the activity represents its mission area and function. The middle panel contains the activity's ID and description. Finally, the bottom panel contains a list of the positions that are ultimately responsible for the activity. The overall length of the activity's box represents the duration of that activity.

Sometimes an activity will be so small compared to its overall planning set, that it will be displayed as a *compressed activity* as shown in Figure 17. For example, an activity with only a 2-minute duration would be too small to be easily seen and understood on a planning set specified in hours or days. However, you do not want to lose track of that activity either. In this case, Sync Matrix Reader will choose to represent the activity using a slightly modified format.

The panels of a compressed activity are essentially the same as those for a regular activity, but they have been re-packaged. The left-most panel contains an image of a clock within a vise. This is the symbol for the compressed activity. The next two upper panels represent the codes of the activity's jurisdiction and department respectively. Beneath them is a panel that contains the positions that are responsible for the activity. At the far right is the panel that contains the activity's ID and text.

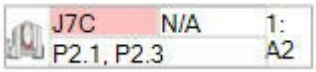

Figure 17. Sample Compressed Activity

The third major activity box that will appear in a typical matrix is a *milestone*. A milestone is an instantaneous activity, that is, an activity with a zero duration. Such activities are typically used to denote the particular starting and ending points of collections of activities. Milestones are represented in a matrix as seen in Figure 18.

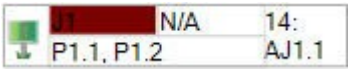

Figure 18. Sample Milestone

The fields shown within a milestone box are the same as those shown for a compressed activity; only the icon is different. Whereas a compressed activity icon was an activity in a vise, a milestone icon is a milestone signpost.

Appearing vertically throughout the activity section of the graph is the planning set timeline. These vertical lines mark the increments of the planning set. The number and values of these increments are determined by the planning set's duration, units, and increment. Changes to these values can alter the appearance of the graph without altering its content.

The Grid panel is divided into multiple tabs. The first tab, **Activities**, shows you the activities that are defined for the matrix. The second tab, **Decision Points**, shows you the decision points defined for the matrix. The third tab, **Relationships**, shows you the relationships that have been defined within the matrix. The last tab, **Layout Overview**, provides you a quick way of navigating a large matrix.

Relationships

Relationships are a key concept within Sync Matrix. They represent the interactions between hazard actions, decision points, and activities. Relationships are used to identify dependencies in terms of the sequences of these objects.

There are two kinds of relationships: *correlated* relationships and *sequential* relationships. Sequential relationships are the easiest to understand. These are simple predecessor relationships. For example, suppose that in a matrix activity A2 cannot begin until activity A1 completes. A1 is a predecessor to A2 and thus A1 and A2 are involved in a sequential relationship. Sequential relationships are most often used to represent activities that must be performed serially (one after the other). An example of this kind of relationship is shown in Figure 19.

Figure 19. Sequential Relationship

In a correlated relationship the start time of an activity does not depend on the completion of some other activity, but rather on that activity's start time. For example, suppose that in a matrix activity A2 must start 30 minutes after the start of activity A1. A1 and A2 are involved in a correlated relationship. Correlated relationships are most often used to represent activities that can be performed in parallel (at the same time) but that are still somehow related. Figure 20 illustrates this scenario.

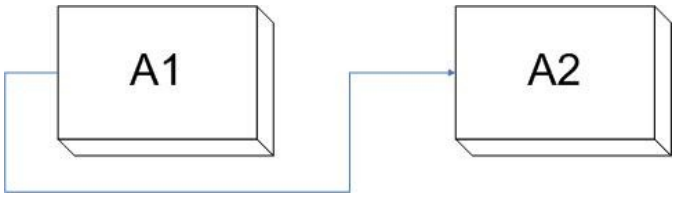

Figure 20. Correlated Relationship

Sync Matrix Reader uses these basic relationships heavily when maintaining its matrices so you will need to understand two primary rules.

1. **Relationships Dominate**. An object involved in a relationship is governed by that relationship; it is no longer a totally independent object. For example, this means that you cannot manually set the start time of an activity that is the target of a relationship. Why not? Because its start time is now dependent on the completion (in the case of a sequential relationship) or start (in the case of a correlated relationship) of some other object.

2. **No Negative Start Delays**. Sync Matrix Reader does not permit a negative value for a relationship's start delay value. The use of such a value generally implies that the relationship has been misrepresented and can be reversed. For example, if activity A1 should start 15 minutes before activity A2, a negative delay start, you could just as easily represent the relationship as saying that activity A2 should start 15 minutes after activity A1.

   This restriction also ensures that a relationship's source's start time can be no greater than the target's start time. Otherwise it would be possible to establish relationships with negative start delay values.

3. **Greatest-Common Denominator**. This rule ensures that all of the requirements of all of the relationships are met. Suppose that the grid has the following set of

relationships:

Relationship	Type	Start Delay
A2 ▶ A1	Sequential	30 minutes
A3 ▶ A1	Correlated	15 minutes

And the following set of activities

Activity	Start Time	Duration
A1	75 minutes (derived)	30 minutes
A2	15 minutes	15 minutes
A3	60 minutes	30 minutes

This allows us to derive the following picture of the activities and their relationships as shown in Figure 21:

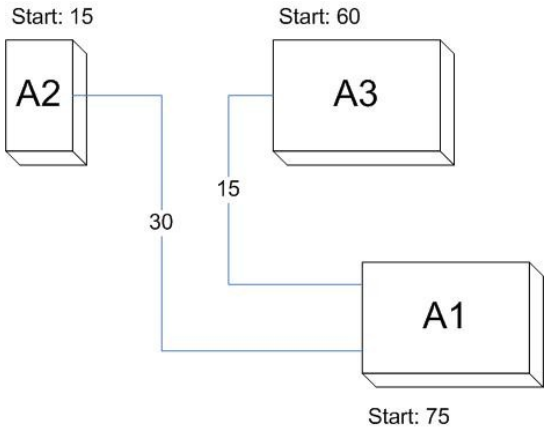

Figure 21. Sample Start Time Calculation

In this example, Sync Matrix Reader calculates that activity A1 will start a time T=75 minutes. How did Sync Matrix Reader arrive at this? It first calculates all of the possible start times for an activity based on its relationships. From the first table, you can see that A1 is the target of two different relationships, one from activity A2 and the other from activity A3. The calculated start time for relationship A2 ▶ A1 is given by:

Start time of A2 + Duration of A2 + Start Delay of A2 ▶ A1 = 60 minutes

Similarly the start time for relationship A3 ▶ A1 is given by:

Start time of A3 + Start Delay of A3 ► A1 = 75 minutes

Why are the two calculations different? Relationship A2 ► A1 is a sequential relationship. This means that A1 cannot begin until A2 is done. In other words, the start delay is added to A2's ending time. On the other hand, relationship A3 ► A1 is a correlated relationship, which means that A1 cannot begin until some time after A3's start time. In other words, it does not matter when A3 ends, only when it begins.

Now that it has two different start times, how does Sync Matrix Reader determine which one is to be used? The rule is that in the case of conflicts, such as in this example, the greatest start time is the one to be used. Why? This is the only way to ensure that all of the relationships are satisfied. If you were to use the lesser value, then you would not have delayed the start of activity A1 long enough with respect to activity A3. By using the largest value, you ensure that all of the start delays have been minimally observed.

Viewing Activity Details

While the Activity graph and grid provide you a way to quickly review the most common aspects of an activity, they do not provide all of the information that is available about an activity. To see all of the details about an activity, you can open the Activity Detail page. This page, shown in Figure 22, gives you the ability to review all aspects of an activity, including those that can be viewed in the grid and graph.

The activity detail page is broken down into several groups of related information. These groups are described in greater detail below.

Summary

The *summary* group describes high-level information about the activity:

- **ID**. The ID field is the unique identifier of the activity or milestone.
- **Description**. The full text description of the activity or milestone.
- **Milestone**. This checkbox indicates whether or not the activity is a milestone. Milestones do not have durations; they are assumed to happen instantaneously.
- **Critical**. Indicates whether or not this is a critical activity. A critical activity or milestone is one that, if it fails to start or end on time, can jeopardize the entire response.
- **Function**. The library function into which this activity or milestone fits.
- **Department**. The department within the jurisdiction that "owns" this activity or milestone.

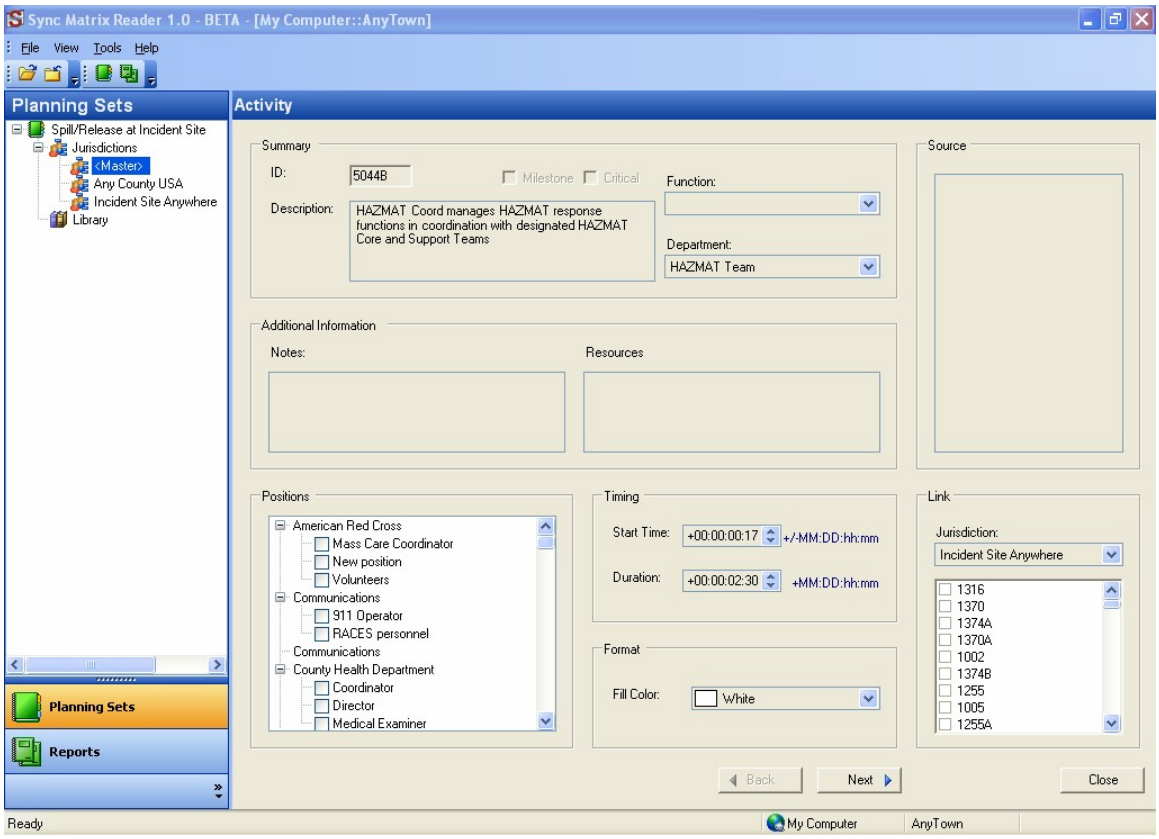

Figure 22. Activity Detail View

Additional Information

The *additional information* group describes supporting information about the activity:

- **Notes**. Any additional information about the activity that a planner might want to document, but not show as part of the description.
- **Resources**. A description of the resources to be used when performing this activity. A typical entry might describe the type and number of resources to be used such as "2 fire trucks" or "3 police cars."

Source

The only information available in the *source* group is the source field.

- **Source**. This field is used when a planner would like to document a source of information that supports this activity. For example a planner might be following a particular methodology that dictates the use of specific activities or resources. The source field allows the planner to document that source so that both current and future planners know why an activity was added to the plan and how to locate that information in the future.

Positions

The *positions* group allows a planner to associate an activity with one or more positions within the departments of the jurisdiction.

- **Positions List**. This list contains all of the departments within the planning set and all of the positions within the departments. This information is structured in a tree. A check in the box next to a position indicates that the activity requires that position.

Timing

The *timing* section deals with the activity's start time and duration.

- **Start Time**. The start time of the activity in `+/-MM:DD:hh:mm` format.
- **Duration**. The maximum amount of time that an activity should in the format `+MM:DD:hh:mm`. Milestones do not have durations.

Format

The *format* section describes the formatting that can be used for an activity or milestone.

- **Fill Color**. This field allows a planner to define the background color for an activity box. This allows the adoption of standards to indicate when there is a question about an activity or when an activity or milestone requires some kind of special attention.

Link

The *link* section allows a planner to define an inter-jurisdictional link. This link associates an activity in one matrix with a corresponding activity in a different matrix. The benefit to such links is that it becomes easy to see discrepancies between jurisdictions as to when a given activity should take place and how long that activity is supposed to take.

- **Jurisdiction**. This drop-down contains all of the jurisdictions within the planning set (except for the one to which the activity belongs).
- **Activity List**. A list of all of the activities in the jurisdiction selected in the Jurisdiction drop-down list.

Filtering Activities

Sync Matrix Reader provides you with the ability to filter the activities that you can see based on various conditions. This filtering does not actually remove or delete activities from the matrix, but instead simply hides those activities that you do not wish to see.

To filter your activities, perform the following steps:

1. Open the matrix in which you are interested.
2. On either the “function” or “department” fields in the grid’s header row, you will see a small image that looks like a funnel. This is the filter icon. By clicking on this icon, you can perform different kinds of filtering:
    a. **All**. All activities are shown.
    b. **Custom**. You can provide filter conditions in the custom filter dialog.
    c. **Blanks**. You can show all activities that have an empty function or department.
    d. **NonBlanks**. Shows only those activities that do not have an empty function or department.
    e. You can select the function or department to filter on from the list of functions or departments that appears at the end of the filter list.
3. Once the filter is functioning, the filter icon will turn blue. If no filter is currently functioning, the filter icon will be grey.

Sometimes a simple filter is not sufficient for what you want to do. If such is the case, then you can use the custom filter dialog to specify more complex filtering conditions. The filter dialog is shown in Figure 23.

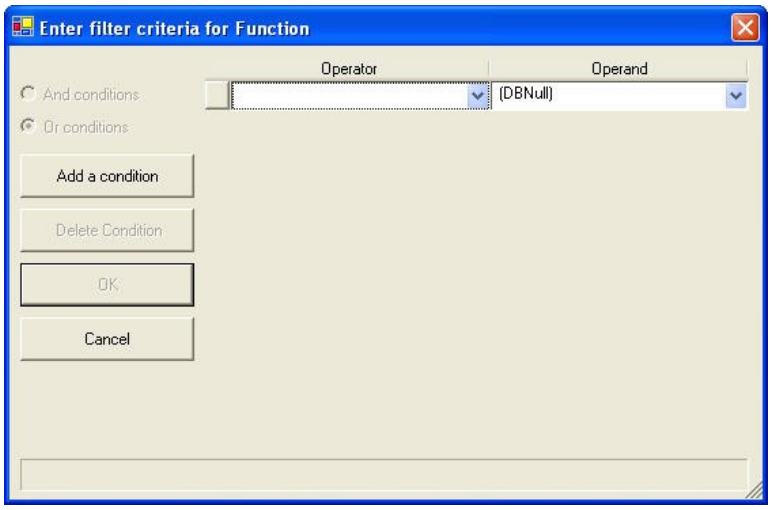

Figure 23. Filter Dialog

This dialog allows you to place logical conditions on the column in question. In this case it is the Function column, but a similar dialog would appear for the Department column. The Operator column provides many different logical operators that you can apply to the function. The Operand column is where you type in the values to be used during the comparison of the values in the column with the operator.

If you decide to add multiple conditions, you can click the **Add a Condition** button. For example, you could create a filter like that shown in Figure 24.

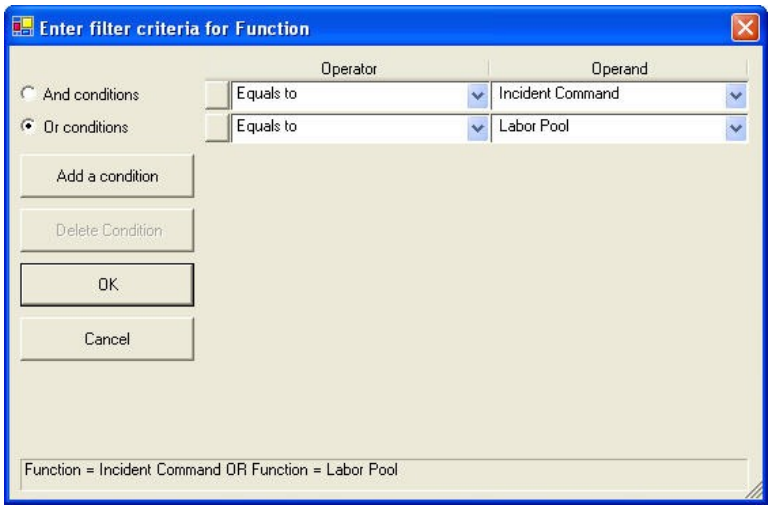

Figure 24. Sample Filter

This example employs a filter that displays only those activities that have a Function value of either "Incident Command" or "Labor Pool." By choosing the **And conditions** or **Or conditions** buttons, you can control how strict the match must be before an activity will be shown. If you choose **And conditions**, then all of the conditions must be satisfied before the activity will be shown. If you choose **Or conditions**, then the activity will be shown so long as at least one of the conditions is satisfied.

If you no longer want a particular condition, simply click on that condition and click the **Delete Condition** button.

To apply the filter, click the **OK** button. If you choose not to apply the filter, just click the **Cancel** button.

Layout Overview

Matrices can become extremely large and complicated. This can make it difficult to find a specific area of the matrix. The l*ayout overview* allows you to view the whole matrix and also navigate, or "zoom in," to specific portions of it.

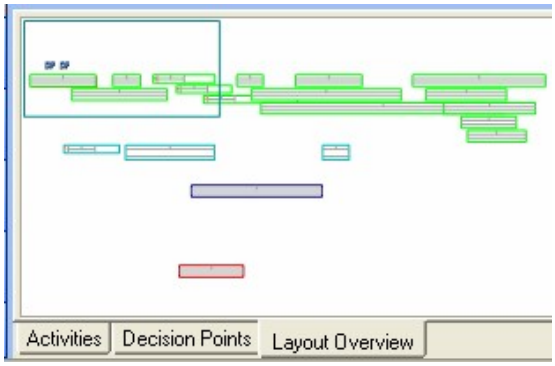

Figure 25. Layout Overview

1. Open the matrix that you want to work with.
2. Click on the **Layout Overview** tab located in the Grid panel of the page. You will see an image similar to that shown in Figure 25.
3. To navigate the matrix, click and drag the edge of the light blue highlight box.
4. To zoom on a particular area, click on the layout overview and drag the mouse (this will create an invisible highlight box). Release the mouse button when you have determined the size of the area you want highlighted. Once the mouse button is released, a new highlight box will appear.

Animating Relationships

Sometimes it is easier to follow a relationship between two activities when it is animated. An animated relationship is basically just a relationship that, when viewed, appears to move between its source and its target. If a relationship is visible, you can animate it.

Figure 26. Relationship Animation

1. Open the matrix that you are interested in.
2. Click on an activity with a relationship to make its relationships visible.
3. Right-click the matrix and select **Animate ▶ Start** from the drop-down menu.
4. To stop the animation, right-click the background and select **Animate ▶ Stop**.

Note: Because this feature can strain the performance of the system, we recommend you stop the animation once you no longer need it.

Zoom

Because a matrix can span a large amount of horizontal and vertical screen span, Sync Matrix Reader provides the ability for you to zoom in and out of a matrix. This zoom function allows you to view the matrix at various scales.

1. Open the matrix that you are interested in.
2. To zoom in 20%, right-click on the matrix and select **Zoom ▶ In** from the context-down menu.
3. To zoom out 20%, right-click the background of the matrix and select **Zoom ▶ Out**.
4. To view all entities (activities, milestones, decision points, and hazard actions) in the same view, right-click the background of the matrix and select **Zoom ▶ To Fit**.
5. To return the zoom to the original view, right-click the background of the matrix and select **Zoom ▶ Normal**.

The level of zoom that you specify can make the graph either easier or harder to read. It all depends on whether you want to look at "the forest" or "the trees."

Printing a Matrix

Sometimes the best way to visualize your matrix is to print it out in hard copy. This can be useful when you meet with other planners to strategize and resolve any issues that have arisen during the planning process.

Before printing the matrix, you will first need to setup the page layout. The page setup process should be completed at the start of every print job. To configure the page setup for a printout, follow these steps:

1. Open the matrix that you wish to print.
2. Right-click the background of the matrix and choose the **Print Options▶ Print** menu item.
3. If you accept the default printer or use a printer that has already been defined, then you can make changes to the paper's size, orientation, source and margins. You can also choose a new printer from the **Printers** drop-down list or by searching for the printer by clicking the **Network** button.
4. Click the **OK** button to confirm the changes to the printer.

5. If you chose a custom paper size, that is a paper size not already defined within Microsoft™ Windows™, you will be shown the **Verify Custom Paper Size** dialog.
    a. You can select the custom height and width of the paper by entering the height and weight and clicking the **OK** button.
6. You will then be taken to the *Print Preview* window.

Part of the page setup process depends on the desired paper size of the final printout. For standard, pre-defined paper sizes, follow these steps:

1. Open the matrix that you wish to print.
2. Right-click the background of the matrix and choose the **Print Options ▶ Print** menu item.
3. Select the desired printer from the drop-down list.
4. If you wish to modify the printer settings, click the **Properties** button.

Note: Selecting a "Custom" paper size will not work. See the section below that discusses custom printing.

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5. Select the "print range" and the number of copies to be printed.

Note: If a print preview has not already been executed, then the Print Range – "Pages" option will not be enabled.

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6. Click the **OK** or **Cancel** buttons to either perform or cancel the print respectively.

Because of an issue relating to Microsoft™ Windows™ (article 259140) relating to the custom page sizes being ignored by PostScript printers, if you wish to print using a custom paper size that has not already been defined to Microsoft™ Windows™, then you should follow these steps:

1. Perform the same steps as you would for a standard paper size.
2. After selecting a custom paper size, you can either print the matrix by
    a. Opening the Print Preview window and clicking the printer icon, or
    b. Right-clicking the background of the matrix and choose the **Print Options ▶ Print** menu item.
3. You will see a confirmation window. Click **OK** to print the matrix or **Cancel** to cancel the print.

Note: The print range cannot be specified when using a custom paper size that is not pre-defined to Windows.

To print a matrix, follow these steps:

1. Open the matrix that you wish to print.
2. To print the matrix, you can either:
   a. Right-click the background of the matrix and click the **Print** menu item or
   b. Click the **File ▶ Print** menu item from the main application menu bar.

Reports

Sync Matrix Reader provides several standard reports. These reports are available on the reports page. This page is accessed by clicking the **Reports** tab in the server explorer. Figure 27 shows the initial form of the reports page.

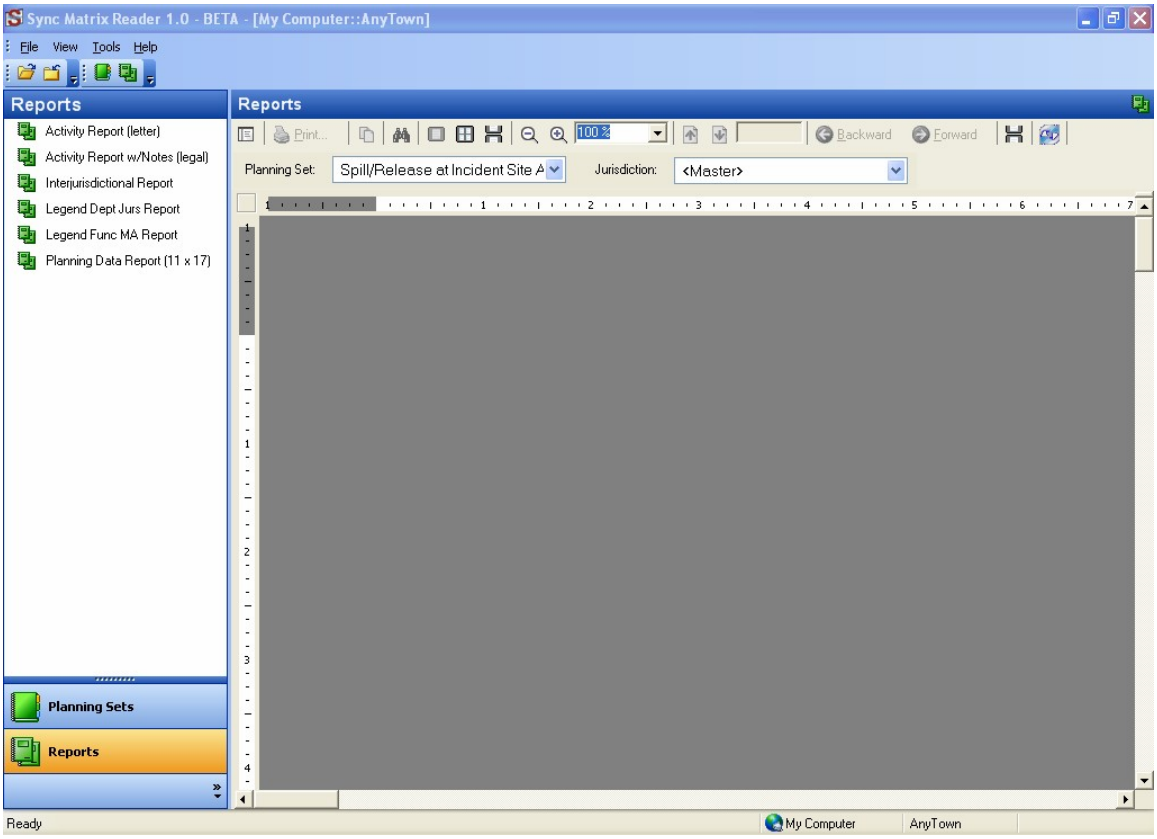
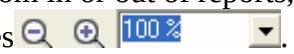
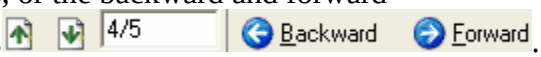


Figure 27. Reports View

The various controls within the Reports page provide you a wealth of capabilities for reviewing and formatting your reports. For example:

- To navigate to a report via grouped contents (Function IDs then Activity IDs), expand the items in the Contents panel. To hide or show the Contents, click the **Show Contents** button.
- To print the reports, click the **Print** Print... button.
- To copy the current report, click the **Copy** button.
- To find text values in the list of reports, click the **Find** button.
- To view a single or multiple report pages in a single view, click the **Single** or **Multi** page button.

- To zoom in or out of reports, use the drop-down box or the magnifying glasses  .
- To scroll the pages or go directly to a report page use the text box, up/down arrows, or the backward and forward arrows  .
- To export the data to Excel, click the **Export to Excel**  button.
- To refresh the report, click the **Refresh** button.

Printing Reports

Before a report can be printed, it must first be generated:

1. Open the site for which you want to print a report.
2. Click on the **Reports** tab to open the reports page. Initially this page will be empty.
3. To choose a report, click on the report type in the **Reports** tab in the explorer. The chosen report will be run for the currently selected planning set and jurisdiction.
4. To change the planning set and jurisdiction, choose them from the pair of drop-down lists on the reports page and click the **Refresh** button on the menu bar.

Once the report has been generated, it can be printed by either:

1. Clicking the **File ▶ Print** menu item, or
2. Clicking the printer icon on the report viewer's toolbar.

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